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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* JURGEN RAMM, BENO WIDRIG, MICHAEL ANTE,  
and CHRISTIAN WOHLRAB

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Appeal 2016-000433  
Application 13/080,779  
Technology Center 1700

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Before KAREN M. HASTINGS, CHRISTOPHER C. KENNEDY, and  
MONTÉ T. SQUIRE, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants<sup>1</sup> seek our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1–40. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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<sup>1</sup> The Real Party in Interest is stated to be “OERLIKON TRADING AG, TRUBBACH” (App. Br. 3).

Claims 1 and 13 are illustrative of the subject matter on appeal  
(emphasis added):

1. A method for producing a workpiece comprising a workpiece body and *a mixed-crystal layer of a multi-oxide* comprising the steps of  
    arc evaporating at least one alloy target in an oxygen containing atmosphere;  
    providing a workpiece body in said atmosphere; and,  
    coating said workpiece body in said atmosphere *with said multi-oxide having a corundum structure,*  
    *wherein said mixed-crystal layer of said multi-oxide comprises areas of at least one element of said alloy target.*

13. A vacuum coating method for producing a mixed-crystal layer of a multi-oxide on a workpiece, comprising the steps of:  
    depositing a coating on the workpiece with a first arc- or sputtering-source electrode, constituting an alloy target, and a second electrode in an oxygenous process-gas atmosphere; and  
    *simultaneously feeding said source electrode with a direct current or direct voltage as well as a pulsed or alternating current or a pulsed or alternating-current voltage,*  
    characterized in that composition of the alloy target essentially corresponds to that of the mixed-crystal layer and that the latter is deposited with a corundum structure by arc evaporating the alloy target,  
    wherein said mixed-crystal layer of said multi-oxide comprises areas of at least one element of said alloy target.

App. Br. 28 and 29 (Claims Appendix).

The Examiner maintains the following rejections that include independent claims 1 and 13 under 35 U.S.C. § 103(a):

- I. Claims 1–12 as unpatentable over at least the combined prior art of Brandle (US 2003/0209424 A1 published Nov. 13, 2003)

and Kohara (US 2009/0214894 A1 published Aug. 27, 2009 )<sup>2</sup>;  
and

- II. Claims 13–40 as unpatentable over at least the combined prior art of Brandle, Kohara, and Okomoto (JP363000458A published Jan. 5, 1988; abstract only translated into English)<sup>3</sup>.

## ANALYSIS

### *The § 103 Rejections of claims 1–12*

We have reviewed each of Appellants’ arguments for patentability. We determine that Appellants have not shown error in the Examiner’s rejections of claims 1–12 on appeal. We affirm for essentially the reasons set forth by the Examiner in the Non-Final Action mailed April 30, 2014, and the Answer. We add the following primarily for emphasis.

Claim 1 calls for a method of arc evaporating an alloy target so as to result in a mixed-crystal layer of a multi-oxide having a corundum structure on a workpiece. Appellants’ Specification describes as prior art that (AlCr)O<sub>3</sub> produced by a low voltage arc discharge process has a “modified  $\alpha$ -aluminum oxide (corundum)” structure (Spec. 1, second full paragraph). Appellants’ Specification also describes other prior art aimed at producing oxide layers with a corundum structure as desirable (Spec. 1–3).

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<sup>2</sup> The Examiner applies additional references to reject dependent claims 4 and 8–12, which all depend from claim 1 (e.g., Ans. 2 and 3). Appellants rely upon the arguments presented for claim 1 for these separate rejections (App. Br. 14 and 15).

<sup>3</sup> The Examiner applies additional references to reject dependent claims 18–35, 39, and 40, which all depend from claim 13 (e.g., Ans. 3–6). Appellants rely upon the arguments presented for claim 13 for these separate rejections (App. Br. 14 and 15).

Appellants do not dispute the Examiner's determination that such a process and product are formed in Brandle, except that Brandle does not specify that its multi-metal oxide has a corundum structure (Non-Final Action 5 ; App. Br. *generally*). The Examiner relies upon Kohara to exemplify that it was known to arc evaporate an alloy target on a workpiece at temperatures of 650 to 800 °C to produce a multi-metal oxide coating with a thermally stable alpha type crystal structure (i.e., corundum crystal structure). (*Id.*) The Examiner's position is that it would have been obvious to adjust the process temperatures as needed in Brandle to obtain the known benefits of such a thermodynamically stable crystal corundum structure (*Id.*). Appellants' arguments are not persuasive of error in the Examiner's obviousness conclusion for the reasons set out by the Examiner (Ans. 8–10).

In addition, because the Brandle/Kohara method and the resulting multi-metal oxide coating composition appear to closely correspond to the method and resulting coating composition defined by claim 1, it appears that the Brandle/Kohara multi-metal oxide process would yield compositions that possess the same property characteristics as a composition produced by the method of claim 1. When a claimed process along with its resultant product reasonably appears to be substantially the same as, or an obvious variant of, a product disclosed by the prior art, the burden is on the applicant to prove that the prior art process and its resultant product does not necessarily or inherently possess characteristics attributed to the claimed product, and that it is of no moment whether the rejection is based on § 102 or § 103 since the burden on the applicant is the same. *Cf. In re Spada*, 911 F.2d 705, 708 (Fed Cir. 1990); *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977).

Appellants' argument that it was "unexpected" to produce a corundum crystal structure at process temperatures of 450 to 600°C (App. Br. 11 citing Spec. 11) is not persuasive of error in the Examiner's rejection. Notably absent from claim 1 (as well as from its dependent claims 2–12) is the recitation of any process temperatures. Furthermore, the burden of showing unexpected results rests on the person who asserts them by establishing that the difference between the claimed invention and the closest prior art was an unexpected difference. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991); *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). The unexpected results must be established by factual evidence, and attorney statements are insufficient to establish unexpected results. *See In re Geisler*, 116 F.3d 1465, 1470–71 (Fed. Cir. 1997). Further, a showing of unexpected result supported by factual evidence must be reasonably commensurate in scope with the degree of protection sought by the claims on appeal. *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983). Appellants' mere assertion that it was unexpected to obtain a corundum lattice structure at a coating temperature of between 450 and 600°C falls short of meeting this burden.

Furthermore, as pointed out by the Examiner, Brandle uses 55 percent by weight Al and 45 percent Cr for a target alloy to form (Al, Cr)<sub>2</sub>O<sub>3</sub> (Non-Final Action 5; Brandle ¶ 54), which reasonably would have been expected to produce alpha aluminum mixed oxide when the arc evaporation process is conducted at temperatures as in Kohara (*e.g.*, Ans. 8 and 9).

Appellants' arguments that Kohara teaches away from a combination with Brandle because it discusses that chromium is apt to interact with iron in the work material so as to result in a shortened life of the coating (App. Br. 12) is unpersuasive. A reference may be said to teach away when a

person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). “The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.” *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n. 8 (Fed. Cir. 2000).

Claim 1 is devoid of any recitation of any specific materials for either the coating or the workpiece. As such, Kohara cannot be said to teach away from the claimed invention. Furthermore, one of ordinary skill in that art would have readily inferred from the applied prior art that choosing appropriate metal oxides and/or workpiece would have been within the level of skill (*e.g.*, Ans. 9 and 10). “[A] reasonable expectation of success, not absolute predictability” supports a conclusion of obviousness. *In re Longi*, 759 F.2d 887, 897 (Fed. Cir. 1985).

Appellants have not adequately explained on this record why the resulting product of the Brandle/Kohara combination would not have some alpha (corundum) crystalline structure so as to render the claimed method obvious (*e.g.*, Ans. 8 and 9); *cf. also In re Spada*, 911 F.2d at 708; *In re Best*, 562 F.2d at 1255. Appellants’ speculation that the Al and Ti of Kohara might not have such a structure is insufficient (Reply Br. 4), especially since the rejection is primarily based on forming an AlCrO<sub>3</sub> coating of Brandle.

Appellants have not persuaded us that the Examiner failed to establish a *prima facie* case of obviousness or otherwise established reversible error in

the Examiner's analysis and findings in this regard. Accordingly, we sustain the § 103 rejections of claims 1–12.

*The § 103 Rejections of Claims 13–40*

With respect to claims 13–40, the Examiner has not adequately explained how Okamoto teaches “simultaneously feeding said source electrode with a direct current or direct voltage as well as a pulsed or alternating current or a pulsed or alternating current voltage” for reasons set out by Appellants (App. Br. 20 and 21; Reply Br. 8). The Examiner's conflation of “both cathode 8 and intermediate electrode (18)” as “the source electrode” (Ans. 10 and 11) appears to be an unreasonable interpretation of the claim term “said source electrode.” The Examiner has not adequately explained why such an interpretation is reasonable. The Examiner has also not relied upon any other reference to remedy this deficiency (Ans. *generally*).

As such, we must reverse the Examiner's § 103 rejections of independent claim 13 along with all the claims dependent thereon (*i.e.*, claims 14–40).

CONCLUSION

The Examiner's § 103 rejections of claims 1–12 is affirmed. The Examiner's § 103 rejections of claims 13–40 are reversed.

Thus, the decision of the Examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED-IN-PART